

Application No. 10/812,765
Response to Office Action

Customer No. 01933

REMARKS

Reconsideration of this application, as amended, is respectfully requested.

THE SPECIFICATION

The specification has been amended to correct two minor informalities of which the undersigned has become aware. No new matter has been added, and it is respectfully requested that the amendments to the specification be approved and entered.

THE CLAIMS

Claim 1 has been amended to recite the features of the present invention whereby at least one thin film transistor is arranged on the internal surface of the back substrate and supplied with a drive signal, and whereby at least one reflective film is formed in a region other than a region where the at least one thin film transistor is formed such that the pixel electrode and the thin film transistor do not positionally coincide. See Fig. 2.

Similarly, claim 17 has been amended in a similar manner with respect to the plurality of thin film transistors recited therein.

In addition, claim 1 has been amended to incorporate the subject matter of claim 9 and to recite the feature of the

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present invention whereby the liquid crystal layer thickness adjusting layer sets a thickness of the liquid crystal layer in the reflective portion to be thinner than a thickness of the liquid crystal layer in the transmissive portion, as recited in, for example, claim 3.

Still further, claims 10 and 11 have been amended to depend from claim 1, and claims 2-4 have been amended to better accord with amended independent claim 1.

And finally, claims 1, 5, 8, 11 and 13-18 have been amended to make some minor grammatical improvements and/or to correct some minor antecedent basis problems so as to put them in better form for issuance in a U.S. patent.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered.

THE PRIOR ART REJECTION

Claims 1 and 8-11 were rejected under 35 USC 102 as being anticipated by US2002/0154257 ("Iijima"); claims 3 and 13 were rejected under 35 USC 103 as being obvious in view of the combination of Iijima and US 92003/00632441 ("Fujimori et al"); claim 7 was rejected under 35 USC 103 as being obvious in view of the combination of Iijima and US 2002/0041351 ("Baek"); claim 14 was rejected under 35 USC 103 as being obvious in view of the

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combination of Iijima and US 2004/0004681 ("Ozawa et al"); and claims 15 and 16 were rejected under 35 USC 103 as being obvious in view of the combination of Iijima, Ozawa et al and Baek. Claims 17 and 18 were not addressed on the merits. These rejections are respectfully traversed with respect to the claims as amended hereinabove.

According to the present invention as recited in amended claims 1 and 17, the liquid crystal display element includes at least one thin film transistor (or a plurality of thin film transistors) which is/are arranged on the internal surface of the back substrate and driven by a drive signal, and whereby the region in which the reflective film(s) is provided does not overlap with the thin film transistor(s). In addition, according to the present invention as recited in amended independent claim 1, and as recited in claim 18 depending from claim 17, a hole is provided in the color filter that corresponds to the reflective portion, such that the hole also does not overlap with the thin film transistor. Still further, according to the present invention as recited in amended independent claim 1, a liquid crystal layer thickness adjusting layer is provided in at least a region corresponding to the reflective portion between the front substrate and the back substrate, in order to set a thickness of the liquid crystal layer in the reflective portion to be thinner than a thickness of the liquid crystal layer in the

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transmissive portion. Similarly, according to amended independent claim 17, liquid crystal layer thickness adjusting layers are provided in regions corresponding to at least the reflective portions on the color filter, in order to set a thickness of the liquid crystal layer in the reflective portions to be thinner than a thickness of the liquid crystal layer in the transmissive portions.

With this structure, since the TFT and the reflective film do not positionally coincide, the TFT is protected such that unnecessary electric fields are not be applied thereto, thereby making the operation of the TFT stable, and making it possible to achieve a bright and high-contrast display in both the transmissive display and the reflective display.

As recognized by the Examiner, Iijima discloses a liquid crystal display element capable of transmissive display and reflective display, which includes a transfective layer 6 such that a transmissive area 6a and a reflective area 6b are formed in one pixel.

It is respectfully submitted, however, that Iijima does not disclose, teach or suggest forming a reflective film on a substrate having a thin film transistor for supplying a signal to a pixel electrode, specifically on a region of the substrate where the thin film transistor is not formed.

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In addition, it is respectfully submitted that Iijima et al does not disclose, teach or suggest forming a transparent film for adjusting the thickness of the liquid crystal layer. By contrast, the transparent smoothing film 22 of Iijima et al merely smooths the unevenness formed by the color filter 20, and transparent electrodes 7 are provided below the transparent smoothing film 22.

The Examiner has cited Fujimori et al for the disclosure of a liquid crystal layer being thinner in a reflective region than in a transmissive region, and for the disclosure of depressions and protrusions formed in a reflective layer.

Fujimori et al also discloses a TFT 30 provided on a same substrate 10 as the reflection electrode 24. However, according to Fujimori et al the reflection electrode 24 is provided over the TFT 30 via an insulating film 18.

It is respectfully submitted, therefore, that Fujimori et al also does not disclose, teach or suggest forming a reflective film in the pixel region in a region that does not overlap with the TFT, in the manner of the present invention as recited in amended independent claims 1 and 17.

It is respectfully submitted, moreover, that Baek has merely been cited for the disclosure of a homogeneous liquid crystal of upper and lower retardation plates with orthogonal slow axes, and of upper and lower polarizing plates with orthogonal transmission

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axes. And it is respectfully submitted that Ozawa et al has merely been cited for the disclosure of setting the phase difference of the transmissive display regions T and reflective display regions R of the liquid crystal display element to $1/2$ wavelength and $1/4$ wavelength respectively.

Baek and Ozawa et al do not disclose, teach or suggest forming a reflective film in the pixel region in a region that does not overlap with the TFT, in the manner of the present invention as recited in amended independent claims 1 and 17.

In view of the foregoing, it is respectfully submitted that the present invention as recited in amended independent claims 1 and 17, and claims 2-8 and 10-16 depending from claim 1, clearly patentably distinguishes over Iijima, Fujimori et al, Baek and Ozawa et al, taken singly or in any combination, under 35 USC 102 as well as under 35 USC 103.

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Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

In the event that claim 1 is allowed, consideration on the merits and allowance of withdrawn claims 2, 4-6 and 12 is respectfully requested.

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If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned for prompt action.

Respectfully submitted,



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